Supporting Information for Flash Ignition of Freestanding Porous Silicon Films: Effects of Films Thickness and Porosity

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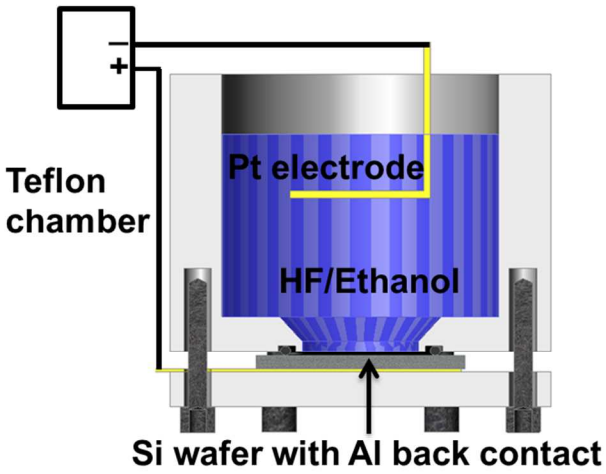

Figure S1. Cross-sectional schematic of the anodization cell that is used for the porous Si formation, and electropolishing.[1]

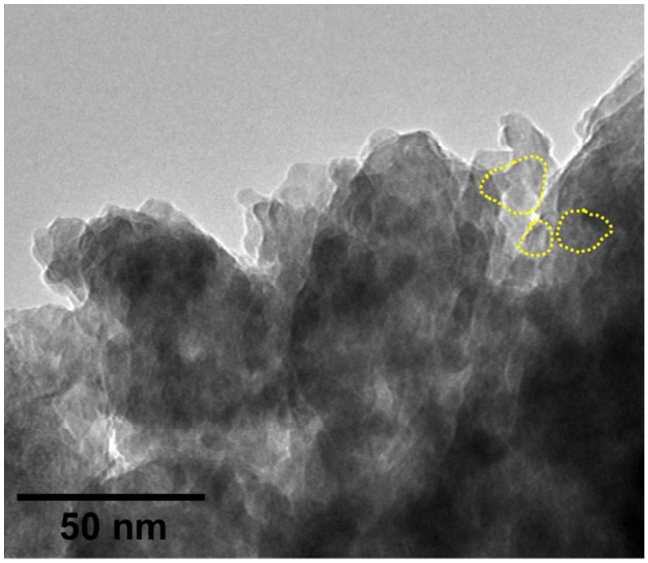

Figure S2. TEM image of the edge of the porous Si film electrochemically etched with HF:ethanol = 1:1 solution. The Si film formed by assembly of nanocrystalline Si with dimensions ranging from 4 to 12 nm.

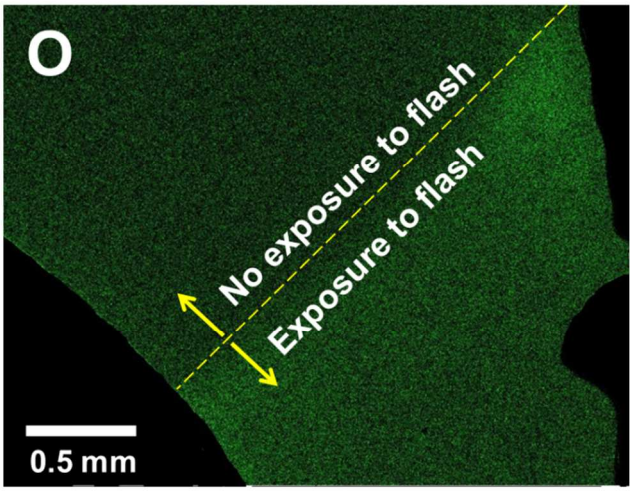

Figure S3. SEM-EDS oxygen elemental mapping image of a porous Si film for which only the lower half is exposed to the Xe flash.

Table S1. Parameters and values of porous Si used in the COMSOL simulation.

Parameters	Values	References
Specific heat of porous Si, $Cp_{p\text{-}Si}$	$35.6*(24+0.003*T-4.23*10^{-5}/T^2)$ J/(kgK)	[2]
Absorption coefficient of porous Si, α (Porosity = 50, 60, 70%)	1338200, 929300, 682700 (m^{-1})	Averaged values from [3-6]
Thermal conductivity of porous Si, $k_{p\text{-}Si}$ (Porosity = 50, 60, 70%)	0.422, 0.352, 0.302 (W/mK)	Averaged values from[3, 7, 8]

References

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